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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/319,699 07/19/99 LIPPERT

G 990326

EXAMINER

MM91/0328

LAW OFFICES OF KARL HORMANN
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CAMBRIDGE MA 02138-2216

WILLE, D.

ART UNIT

PAPER NUMBER

2814

DATE MAILED:

03/28/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/319,699

Applicant(s)

LIPPERT ET AL.

Examiner

Douglas A Wille

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 January 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Abandonment

1. The Notice of Abandonment, paper # 8, is withdrawn.

Claims Objected to

2. Claims 14 and 22 are objected to because of the following informalities: The last line of claim 14 contains gibberish as units. The last line of claim 22 has incorrect units. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 14 – 19, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lanzerotti et al.(IEEE) in view of Lanzerotti et al.(IEDM) and Sato et al.
5. With respect to claims 14 – 16, 19 and 22, Lanzerotti et al. (IEEE) show (see Figure 3a) a HBT and a method of forming the HBT with a SiGeC base which is doped with B, has a C content of 0.5% and show a 46 nm base with 25 % Ge. With respect to claim 2, Lanzerotti et al. (IEEE) show that the use of C reduces strain in the base. Figure 1 shows the B level as greater than $5(10)^{19}$. Lanzerotti et al. (IEDM) show a 10 nm base with 20% Ge. Sato et al. show an essentially flat top Ge distribution (see Figure 4 and column 5, line 8) and the product is 531. Note that a full range of Ge distributions and base thicknesses are shown which cover the claimed range and are therefore obvious.
6. With respect to claim 17, Lanzerotti et al. (IEEE) show the base layer is 46 nm but since criticality has not been established this is regarded as equivalent to 40 nm.

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7. With respect to claim 18, the Lanzerotti et al. (IEEE) Ge concentration is 0.25.
8. With respect to claim 21, since the Ge distribution of Sato et al. is not a perfect flat top it may also be considered as being trapezoidal.
9. Claim 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lanzerotti et al. (IEEE) in view of Lanzerotti et al. (IEDM) and Sato et al. and further in view of Crabbe et al.
10. Crabbe et al. shows a SiGe device with a triangular shaped Ge distribution (see Figure 2 and column 4, line 5 et seq.) to increase the collector current and the current gain (column 4, line 12). It would have been obvious to use the Crabbe et al. distribution as a design alternative for the benefit shown.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-3:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

daw *BAW*
March 20, 2001


OLIK CHAUDHURI
SUPERVISORY PATENT EXAMINER
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